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ABSTRACT

Cooperative learning as a promising approach for higher education is discussed in terms of its relation to active learning, cognitive processing, and personalizing principles and concepts. Preliminary data from experimental classes demonstrated little advantage for a group improvement incentive. While students in the bottom third of these classes improved and students in the top third held their lead, the incentive for group improvement could not be seen as the cause, since previous classes without the incentive saw an even greater gain for poorer students. The importance of group training and advantages of active learning are discussed. (JD)

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# Learning Cooperative Learning Through Cooperative Learning in a College Mastery Learning Format

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# Learning Cooperative Learning Through Cooperative Learning in a College Mastery Learning Format

Some years ago Benjamin Bloom (1984) wrote his cogent article titled "The Search for Methods of Group Instruction as Effective as One-to-One Tutoring." Most of the suggestions and recommendations Bloom advocated involved improving student processing of conventional instruction, and he first discussed the efficacy of cooperative learning approaches. Using the research generated by Walberg (1984), Bloom noted the substantial effect size (.80) found for cooperative learning in schools. This effect size corresponds to a percentile equivalent of 79.

A great deal of research has been undertaken on the various effects of cooperative learning in schools (Aronson, Blaney, Stephan, Sikes, & Snap, 1978; Gilbert and Gay, 1985; Johnson, D. W. & Johnson, F. P., 1982; Johnson, D. W. & Johnson, R. T., 1987; Sharon, 1980; Slavin, 1980). These effects relate to benefits for minority children, social development, school integration, and academic enhancement. Indeed, cooperative learning is one of the most promising and exciting innovations precisely because of its overall worth.

The approach corresponds very well with the cognitive processing interest of many teachers. Students do much more

construction of personal knowledge as they interact with others. Discussion of principles and concepts, especially when guided by a well-designed group task, facilitates meaningfulness (meaning-making) and students tend (in my experience) to lower their inhibitions about asking questions in class for clarification when they are all working noisily in small groups.

While much has been written and studied about cooperative learning in schools, little can be found regarding its application to higher education. College English departments have for sometime utilized collaborative techniques for teaching writing (Gephardt, 1980; Kail, 1983; Wixon & Stone, 1977), and recently the faculty of the University of Minnesota published a 100 page handbook on "Strategies for Active Learning in University Classrooms" (Schomberg, 1986). This collection of essays includes one on cooperative learning (Smith, 1986) in which the author specifies five steps to implement the procedures:

1. Clearly specify the objectives for the lesson.
2. Make decisions about placing students in learning groups before the lesson is taught.
3. Carefully explain the task, goal structure, and learning activity.

4. Monitor the effectiveness of the cooperative learning groups and intervene to provide task systems or to increase the students' interpersonal and group skills.
5. Evaluate student achievement and help students discuss how well they collaborated with one another (pp. 19-21).

Rosen (1988) wrote of the need for "new wave" college instruction which prepares students not for the old industrial age but for the new age of space and technology. Rosen listed five new wave instructional recommendations:

1. Create a responsive environment - one that builds affiliation, trust, security, comfort, belongingness, caring and involvement.
2. Design experiential learning activities.
3. Develop cooperative learning efforts.
4. Foster metacognitive growth in learning.
5. Provide for diverse learning styles and modes of acquiring information and displaying learning.

Most of us ardently believe that we should model good school practice in our own teaching, and I have modeled the mastery learning model for many years. Recently, I have become more and more excited by the promise of cooperative learning, so I have added small group processing to the Educational Psychology classes I teach. Since I have been using Slavin's

(1988) text, I felt some adaptations of his Student Teams Achievement Divisions (STAD) approach would be sensible. In this approach, Slavin (1980) recommended the following procedures:

1. The teacher presents the lesson.
2. The teacher gives work assignments to student teams of mixed ability, gender, and ethnicity.
3. The teams work to help each other learn. They quiz each other, often study out of class together.
4. Each student takes a quiz independently.
5. The teacher determines which group has the most improvement and provides public recognition (pp. 396-398).

In my classes students first study a single chapter, using a study guide previously distributed. At the first class, I provide explanation, examples and illustration of major concepts in the chapter. Then students independently take a formative quiz over the material and meet in small groups to share their perspective on each test item. Often, an exercise related to the material is assigned for group work as well. The exercise is designed to stimulate discussion of personal applications of the principles and concepts in the chapter material. The last (second) day of the week, students review material in small groups and finally take a summative quiz independently. I

calculate the average for each group and announce the highest achieving group and the group with the greatest improvement at the next class.

Group Grades

An interesting element of some approaches to cooperative learning in the schools is the use of group averaging of grades. While many believe that a single group grade shared by group members is not fair, there is some evidence that students see the group grade as more fair than other grading approaches after a task has been completed (Johnson, D. W., Johnson, R. T., Holubec, E., Roy, P., 1984). Since this group grading approach is so unusual and controversial, I have felt that students in the Educational Psychology class should have some experience with it, perhaps in a most innocuous manner. This past spring I decided to announce after midterm to my two spring classes that any group which improved on any remaining summative quiz by two percentage points over their midterm group average would earn two extra credit points for each member and it was explained that such credit on each of the last three quizzes could carry one over to the next higher final grade.

Later, I decided to examine student achievement data to see if this group dependency-incentive condition might have created improved test scores, especially compared to classes of the previous semester using the same approach but without the extra

credit for improved group averages. The data were not drawn from a formal experimental approach, but rather represent a mere post hoc observation of achievement scores that followed one particular event in cooperative learning. The data are presented here merely as descriptive of possible effects.

Class Averages

Mean scores were calculated for the first three and the last three quizzes of the semester. The incentive for group improvement was introduced just before the last three quizzes. The combined means for the last three quizzes (after the incentive) were slightly higher in both classes than the combined means for the first three quizzes (Class I, n=37, achieved a gain a 2.84 percentage points and Class II, n=36, achieved a gain of 2.3 percentage points). These gains, of course, could be due to any number of factors, and they could be insignificant. Comparing them to two classes of the previous semester (when no similar incentive was offered) demonstrates that the gain was not impressive. Class I of the previous semester gained 2.7 percentage points on the final three quizzes, but Class II of that previous semester lost on the average -1.2 percentage points.

Lowest Third Versus Highest Third Students

In Class I, students who were in the bottom third of their class after the first three quizzes (and who had not missed any

quiz, n=9) gained 2.6% while students in the top third gained 1.5%. In Class II, the bottom third (n=11) gained 4.42% while students in the top third lost .6%.

Students in the class of the previous semester, with no extra credit opportunity for group improvement, showed even more dramatic results. In that class, those in the bottom third gained a full 10.1% and those in the top third lost -1.53%.

Conclusions

It cannot be concluded from these preliminary data that adding incentives of the type described here based upon group improvement scores increases student test score averages compared to the same procedures used without the group dependency incentive in the previous semester.

While the bottom third of students for the first three quizzes gained more than the top third, it should be noted that the top third suffered either no loss or only slight loss. It cannot be said, either, that these gains of the poorer students were related to the incentive since previous students in the bottom third of their class gained even more. More likely, these gains by the poorer students may be related to the learning-to-learn phenomenon in a mastery approach or perhaps a natural late semester urgency.

What seems more certain than any conclusions one can draw from these student grades is the look and feel and sound of the

classroom when students turn to their groups and begin discussing the relation of (for example) identity types to their own experience, when they discuss parent types and relate these to their own parents, when they exchange ideas about how they motivate themselves to study, or when they construct a written rationale for study of the educational process. As I look around the classroom, it is no exaggeration to say that in most instances there are far greater numbers of smiles, more vibrant facial expressions, more intensity of voice, and more joy in being there. One group recently could bearly contain or restrain its energy. From across the room I heard a young man laugh and shout, "Dr. Burke, they're making fun of my examples. I've been put down, slammed into the ground." His partners laughed so hard I thought they would never recover.

Problems

The problems one encounters in a cooperative learning format chiefly involve peer group dynamics and absence. Occasionally (but rarely), a student will complain that another in his or her group is not doing his or her share. This would be expected to increase if grades were based on group averages. Occasionally, also, are notices that a group has not become a group. That is, two people relate to one another and exclude a third. Or, a group may be comprised of people who do not talk to one another easily, or who lack sufficient motivation to take

the work seriously. Of course, such students exist in conventional lecture classes as well, but lack of involvement isn't so noticeable there.

Absences present another problem, since group averages may not be calculated for quizzes or exercises where one or two members are missing, thus, those present have no chance at recognition or at any other gains available to others.

Needed Research

These questions might be addressed more formally in the future, but with appropriate controls, and with fuller cooperative learning roles involved. What reactions would our students have if more of their grades were based upon group averages? How best would one form group membership? How should groups be trained for optional functioning? All the same questions that motivate research on cooperative learning at the secondary or elementary level may motivate inquiry at the college level as well.

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